


Application No. 09/396,266  
Docket No. 1998U007A.US  
Reply to Office Action Dated May 15, 2003

**Amendments to the Claims**

This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

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- 1-3 (Cancelled).
4. (Previously cancelled).
5. (Cancelled).
6. (Previously cancelled).
- 7-11 (Cancelled).
- 12-13 (Previously cancelled).
- 14-20 (Cancelled).
21. (Previously cancelled).
22. (Cancelled)
23. (Previously cancelled).
- 24-28 (Cancelled).
- 29-30 (Previously cancelled).

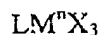
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31-32 (Cancelled).

33. (New) A process for polymerizing olefins comprising contacting olefin(s) with a catalyst system comprising an activator and a catalyst precursor, wherein

(a) the activator is a neutral or ionic ionizing salt comprising a cation selected from the group consisting of triphenylcarbenium, dimethylanilinium, and trialkylammonium, and an anion selected from the group consisting of borate and aluminate; and

(b) the catalyst precursor is represented by:



wherein M is a Group 4 metal;

L is an unsubstituted or substituted indenyl, fluorenyl ligand or substituted cycloalkadienyl ligand except for pentamethylcyclopentadienyl;

X is selected from the group consisting of hydrogen, and unsubstituted and substituted versions of: aryl, alkyl, alkenyl, alkylaryl, and arylalkyl radicals having from 1-20 carbon atoms; and

n is 4.

34. (New) The process of claim 33 wherein L is a substituted cycloalkadienyl excepting pentamethylcyclopentadienyl.

35. (New) The process of claim 33 wherein L is an unsubstituted or substituted indenyl or fluorenyl ligand.

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36. (New) The process of claim 33 wherein the activator is a salt comprising a cation selected from the group consisting of triphenylcarbenium, dimethylanilinium, and trialkylammonium, and an anion that is a borate.

37. (New) The process of claim 33 wherein the catalyst system is selected from the group consisting essentially of (MeCp)Zr(CH<sub>2</sub>Ph)<sub>3</sub>/triphenylcarbenium tetrakis(pentafluorophenyl)borate, (1,3-Me<sub>2</sub>Cp)Zr(CH<sub>2</sub>Ph)<sub>3</sub>/triphenylcarbenium tetrakis(pentafluorophenyl)borate, (Fluorenyl)Zr(CH<sub>2</sub>Ph)<sub>3</sub>/triphenylcarbenium tetrakis(pentafluorophenyl)borate, 2-(p-tolylindenyl)Zr(CH<sub>2</sub>Ph)<sub>3</sub>/triphenylcarbenium tetrakis(pentafluorophenyl)borate, (1-trimethylsilylindenyl)Zr(CH<sub>2</sub>Ph)<sub>3</sub>(η<sup>6</sup>(PhCH<sub>2</sub>B(C<sub>6</sub>F<sub>5</sub>)<sub>3</sub>))/triphenylcarbenium tetrakis(pentafluorophenyl)borate or (1,3-Me<sub>2</sub>Cp)Zr(CH<sub>2</sub>Ph)<sub>3</sub>/trihexylammonium tetrakis(pentafluorophenyl)borate.

38. (New) A catalyst system comprising an activator and a catalyst precursor, wherein

- (a) the activator is a neutral or ionic salt comprising a cation selected from the group consisting of triphenylcarbenium, dimethylanilinium, and trialkylammonium, and an anion selected from the group consisting of borate and aluminate; and
- (b) the catalyst precursor is represented by:



wherein M is a Group 4 metal;

L is an unsubstituted or substituted indenyl, fluorenyl ligand or substituted cycloalkadienyl ligand except for pentamethylcyclopentadienyl;

X is selected from the group consisting of hydrogen, and unsubstituted and substituted versions of: aryl, alkyl,

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alkenyl, alkylaryl, and arylalkyl radicals having from 1-20  
carbon atoms; and  
n is 4.

39. (New) The catalyst system of claim 38 wherein L is a substituted cycloalkadienyl  
excepting pentamethylcyclopentadienyl.
40. (New) The catalyst of claim 38 wherein L is an unsubstituted or substituted  
indenyl or fluorenyl ligand.
41. (New) The process of claim 38 wherein the activator is a salt comprising a cation  
selected from the group consisting of triphenylcarbenium, dimethylanilinium, and  
trialkylammonium, and an anion that is a borate. *Cat.*
42. (New) The catalyst system of claim 38 selected from the group consisting  
essentially of (MeCp)Zr(CH<sub>2</sub>Ph)<sub>3</sub>/triphenylcarbenium  
tetrakis(pentafluorophenyl)borate, (1,3-Me<sub>2</sub>Cp)Zr(CH<sub>2</sub>Ph)<sub>3</sub>/triphenylcarbenium  
tetrakis(pentafluorophenyl)borate, (Fluorenyl)Zr(CH<sub>2</sub>Ph)<sub>3</sub>/triphenylcarbenium  
tetrakis(pentafluorophenyl)borate, 2-(p-tolyindenyl)Zr(CH<sub>2</sub>Ph)<sub>3</sub>/  
triphenylcarbenium tetrakis(pentafluorophenyl)borate, (1-  
trimethylsilylindenyl)Zr(CH<sub>2</sub>Ph)<sub>3</sub>( $\eta^6$ (PhCH<sub>2</sub>B(C<sub>6</sub>F<sub>5</sub>)<sub>3</sub>))/triphenylcarbenium  
tetrakis(pentafluorophenyl)borate or (1,3-Me<sub>2</sub>Cp)Zr(CH<sub>2</sub>Ph)<sub>3</sub>/trihexylammonium  
tetrakis(pentafluorophenyl)borate.